

## SHORT REPORT

# Muscle dysmorphia: a new syndrome in weightlifters

P Y L Choi, H G Pope Jr, R Olivardia

*Br J Sports Med* 2002;**36**:375–377

Recently more men have reported a desire for larger, more muscular bodies. Muscle dysmorphia (MD) is a new syndrome in which individuals (usually men), although highly muscular, have a pathological belief that they are of very small musculature. As more men are motivated to take up training with weights in order to develop greater musculature, more cases of MD are likely to be encountered. A greater understanding and awareness of the syndrome are therefore needed. Therefore the aim of this study was to investigate perceptions of physical self in male weightlifters, one group with MD ( $n = 24$ ) and one without ( $n = 30$ ). Between group comparisons were made using the multidimensional body-self relations questionnaire. The findings confirm the nature of the disorder in that those with MD syndrome have poorer body image and are less happy with their bodies. Moreover, in addition to a desire for greater muscularity, they are very concerned not to gain fat. The results also suggest that future research into perceptions of specific body parts and health is warranted.

Research evidence indicates that body dissatisfaction in men has increased in recent years<sup>1</sup> and that the nature of this dissatisfaction is not so much a desire for smaller and thinner bodies, as is the case with women, but larger and more muscular ones.<sup>2,3</sup> One study<sup>3</sup> of men in Austria, France, and the United States found that their ideal bodies were about 28 lbs more muscular than their perceived actual bodies. The authors suggest that this discrepancy may be a contributing factor in the apparent rise in eating and body dysmorphic disorders, including muscle dysmorphia (MD), in men.

MD has been observed to be a condition that afflicts primarily men, although it can be present in women.<sup>4</sup> It is a unique form of body dysmorphic disorder where, instead of being pathologically dissatisfied with a single body part, the person is dissatisfied with their whole body. Those with MD, although often highly muscular, believe themselves to be of very small musculature. This belief leads them to become obsessed with exercising, particularly weightlifting, and at risk of misusing anabolic-androgenic steroids. People with MD also tend to avoid situations and places where they might be seen without clothing (and if that is unavoidable it causes them severe distress) and often wear many layers of clothing, even in hot weather, to avoid their bodies being seen. For many, social relations and occupational functioning are adversely affected as a result. For full diagnostic criteria see Pope *et al.*<sup>4</sup> These criteria were later confirmed in a psychiatric case-control study of 24 men with MD and 30 comparison weightlifters.<sup>5</sup> There are no prevalence estimates for MD, as epidemiological studies are still to be conducted on this new disorder. It is therefore an under-researched condition and the aim of this study was to explore further its nature by examining body image perceptions in those with MD compared with weight lifting controls using the multidimensional body-self relations questionnaire (MBSRQ).<sup>6</sup> This instrument was considered suitable because

we were interested in more than just differences in perceptions of physical size and appearance. The MBSRQ also measures attitudes towards cognitive-behavioural and evaluative dispositions of the physical self including the body's physical ability and its health. Given what is already known about the disorder, we hypothesised that the MD group would be more dissatisfied with their weight and appearance and would engage in more appearance improvement behaviours than the controls. However, as so much is still to be discovered about MD, we did not make any predictions about differences between the groups on attitudes towards, or behaviours of, health and fitness.

## METHODS

Participants were recruited from 23 gymnasias in the Boston area. They were screened by telephone using screening questions to allocate them to either the MD group ( $n = 24$ ) or the control group ( $n = 30$ ). As these participants are the same as those recruited for the study by Olivardia *et al.*,<sup>5</sup> full details of participant recruitment can be found there together with the results confirming that the MD group did indeed meet diagnostic criteria for MD. Participants came to the laboratory and, after providing written informed consent, completed a battery of psychiatric and psychological tests as well as providing a number of physiological measures. The data reported here are from the MBSRQ. The other data are reported in Olivardia *et al.*<sup>5</sup>

The MBSRQ is a 69 item questionnaire that contains seven factor subscales (appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, health evaluation, health orientation, illness orientation) plus three others related to body area and weight satisfaction. All subscales have been found to have acceptable internal consistency and confirmed convergent, discriminant, and construct validity.<sup>6</sup> Taking the appearance subscales as an example, higher scores on appearance evaluation indicate that the person feels physically attractive and is satisfied with his/her physical appearance. Higher scores on appearance orientation indicates a greater investment in one's physical appearance through, for example, "grooming behaviours".

## RESULTS

The groups were similar in terms of educational level ( $\chi^2 = 5.98$ ,  $df = 3$ ,  $p > 0.05$ ) and occupational status ( $\chi^2 = 6.71$ ,  $df = 7$ ,  $p > 0.05$ ). They were also similar in age, percentage body fat, weight, height, fat free mass index, and exercise frequency and duration (minimum  $t = 0.5$ ,  $df = 52$ ,  $p > 0.05$ ).

Three sets of two tailed analyses were conducted on the MBSRQ data. The first set analysed the affective and cognitive-behavioural components—that is, the appearance evaluation, appearance orientation, fitness evaluation, fitness

**Abbreviations:** MD, muscle dysmorphia; MBSRQ, multidimensional body-self relations questionnaire

**Table 1** Mean (SD) values of the MBSRQ subscales

	MD	Controls	p Value
Appearance evaluation	3.07 (0.86)	3.70 (0.76)	0.006
Appearance orientation	4.09 (0.67)	3.56 (0.68)	0.006
Fitness evaluation	3.83 (0.86)	4.12 (0.65)	
Fitness orientation	3.83 (0.86)	4.12 (0.65)	
Health evaluation	3.72 (0.69)	4.17 (0.51)	0.009
Health orientation	4.02 (0.54)	3.91 (0.58)	
Illness orientation	3.49 (0.76)	3.22 (0.82)	
Overall appearance	2.95 (1.04)	4.00 (0.70)	0.000
Body area satisfaction	3.05 (0.73)	3.59 (0.59)	0.005
Face	3.50 (1.02)	3.72 (0.92)	
Hair	3.16 (1.16)	3.44 (1.21)	
Lower torso	2.95 (1.12)	3.82 (0.84)	0.002
Mid torso	2.62 (1.27)	3.13 (1.12)	
Upper torso	3.12 (1.15)	3.72 (0.99)	
Muscle tone	3.04 (1.16)	3.89 (0.81)	0.003
Weight	2.70 (1.16)	3.55 (0.86)	0.004
Height	3.29 (1.39)	3.41 (1.05)	
Overweight preoccupation	2.80 (0.78)	2.25 (0.69)	0.02
Weight perception	3.02 (0.68)	2.96 (0.44)	

MD, Muscle dysmorphia; MBSRQ, multidimensional body-self relations questionnaire.

orientation, health evaluation, and illness orientation subscales. Using a series of *t* tests with a Bonferroni adjusted *p* value of 0.008 to control for type I error, the groups were found to significantly differ on the appearance evaluation ( $t = 2.88$ ,  $df = 52$ ,  $p = 0.006$ ) and the appearance orientation ( $t = 2.84$ ,  $df = 52$ ,  $p = 0.006$ ) subscales only (table 1). Health evaluation approached significance ( $t = 2.72$ ,  $df = 52$ ,  $p = 0.009$ ). Thus, the MD group considered themselves to be less physically attractive and their appearance more important to them than the controls. There was also a near significant finding indicating that they considered themselves to be less healthy.

The second set of analyses evaluated differences in overall appearance and body area satisfaction. The MD group were found to be significantly less satisfied with their overall body appearance ( $t = 4.31$ ,  $df = 51$ ,  $p = 0.001$ ). For body area satisfaction, as per the MBSRQ manual's scoring instructions, we initially calculated an overall score by compiling ratings for the various body area items: face, hair, lower torso, mid torso, upper torso, muscle tone, weight, and height. The difference between the groups was significant ( $t = 2.93$ ,  $df = 51$ ,  $p = 0.005$ ), with the MD group being less satisfied. However, given the nature of MD, it was considered more informative to analyse the body area items separately. Thus, a series of independent *t* tests were carried out applying a Bonferroni adjusted *p* value of 0.006. It was found that the MD group was significantly less satisfied with their lower torso area ( $t = 3.21$ ,  $df = 51$ ,  $p = 0.002$ ), their muscle tone ( $t = 3.14$ ,  $df = 51$ ,  $p = 0.003$ ), and their weight ( $t = 3.02$ ,  $df = 51$ ,  $p = 0.004$ ) (table 1).

The final set of analyses compared the groups on overweight preoccupation and weight perception. The *t* tests (with adjusted *p* value of 0.02) showed a significance difference on overweight preoccupation only ( $t = 2.16$ ,  $df = 51$ ,  $p = 0.01$ ), with the MD group being more preoccupied than the controls (table 1).

## DISCUSSION

The findings of this exploratory study confirm the nature of the disorder in that people with MD do indeed have poorer body image than controls. The MBSRQ showed that not only did those with MD desire even greater musculature, they were also very concerned not to gain fat. The results of the questionnaire also disclosed greater dissatisfaction with overall appearance and muscle tone and weight, which was not surprising to us, but we found their greater dissatisfaction with lower torso areas (buttocks, hips, thighs, and legs) noteworthy.

## Take home message

Muscle dysmorphia (MD) is a new syndrome characterised by highly muscular individuals (usually men) having a pathological belief that they are of very small musculature. As well as a desire for greater musculature, they are also very concerned not to gain fat. If more men are taking to the gym in order to increase their musculature, some may be at risk of developing MD.

The near significant finding that the MD group consider themselves to be less healthy was also surprising, and this warrants further investigation. As recent research on women has shown that good health is associated with having an attractive body,<sup>7,8</sup> we wonder if this is becoming the case for men too, which may account for the self perceived poorer health of the MD group.

In conclusion, this study aimed to explore further the nature of MD by examining body image perceptions in a group of weightlifters with MD and a control group. In addition to confirming previous findings, we report some new findings that indicate investigation of perception of body parts and health is warranted. In a changing culture where men's bodies are becoming more visible alongside an increased acceptance of physical exercise as a desirable activity, MD in men may be one negative consequence of physical exercise behaviour, particularly weight training, being motivated primarily by physical appearance. How to prevent this and, if it occurs, what to do about it are important questions for both researchers and practitioners.

## ACKNOWLEDGEMENTS

We are grateful to the two anonymous referees for their very helpful reviews and to Professor Steve Bird for comments on an earlier version of this report.

## Authors' affiliations

**P Y L Choi**, Department of Social Sciences, Loughborough University, Leicestershire LE11 3TU, UK

**H G Pope, Jr, R Olivardia**, Biological Psychiatry Laboratory, McLean Hospital, Harvard Medical School, Cambridge, Massachusetts, USA

Correspondence to: Dr Choi, School of Human Movement, Recreation and Performance, Victoria University, PO Box 14428, Melbourne, Victoria 8001, Australia; Precilla.Choi@vu.edu.au

Accepted 16 April 2002

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## COMMENTARY

Research on women and eating disorders has long dominated the body image literature.<sup>1</sup> This report expands our understanding of men experiencing a form of body dysmorphic disorder (BDD) related to self perceived muscularity. Although readers must consult another publication for details on recruitment and diagnostic procedures and criteria,<sup>2</sup> the authors use a validated, multidimensional assessment to elucidate the nature of the body image differences associated with MD among weightlifters. Sample size limits statistical power to detect smaller apparent differences. In view of evidence that weightlifting can benefit body image,<sup>3</sup> future studies with larger samples might include a third matched

cohort who do not regularly lift weights. We clearly need continued research on the epidemiology of MD, how it differs from other forms of BDD, the extent to which it entails general appearance and muscularity concerns versus a preoccupation with an individually variable aspect of the body's definition, and its distinctive psychosocial diatheses and sequelae.

**T F Cash**

Old Dominion University, Norfolk, VA 23529-0267, USA;  
TCash@odu.edu

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